



**“Education for Sustainability Development (ESD) is a vision of education that seeks to empower people to assume responsibility for creating a sustainable future.”** UNESCO, *Education for Sustainability - From Rio to Johannesburg: Lessons Learned from a Decade of Commitment*, 2002

# GreenSkills4VET

Application Number 2016-1-DE02-KA-202-003386

## Intellectual Output 4: Development and evaluation of OER teaching and learning material

This report has been edited by project partner Céreq  
taking into account the contributions of all partners

Août 2018

Report author: Matteo Sgarzi (Céreq)



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## Partners

### **Stiftung Fachhochschule Osnabrueck**

(Project coordination)

Prof. Dr. Christel Kumbruck

Email: [c.kumbruck@hs-osnabrueck.de](mailto:c.kumbruck@hs-osnabrueck.de)

<https://www.hs-osnabrueck.de/>

### **Universität Kassel**

Prof. Dr. Bernd Overwien

Email: [bernd.overwien@uni-kassel.de](mailto:bernd.overwien@uni-kassel.de)

<http://www.uni-kassel.de/uni/>

### **Centre d'études et de recherches sur les qualifications**

Mrs. Felicie Drouilleau

Email: [felicie.drouilleau@cereq.fr](mailto:felicie.drouilleau@cereq.fr)

<http://www.cereq.fr/>

### **BFI OÖ – Berufsförderungsinstitut Oberösterreich**

Mrs. Gabriele Winkler

Email: [gabriele.winkler@bfi-ooe.at](mailto:gabriele.winkler@bfi-ooe.at)

<http://www.bfi-ooe.at>

### **ASPETE**

Prof. Dr. Leonidas Gomas

Email: [gomas@otenet.gr](mailto:gomas@otenet.gr)

[www.aspete.gr](http://www.aspete.gr)

### **Hellenic German Chamber of Commerce and Industry**

Mrs. Alexandra Tavaridou

Email: [a.tavlaridou@ahk.com.gr](mailto:a.tavlaridou@ahk.com.gr)

<http://griechenland.ahk.de>

### **WETCO**

Mrs. Svetla Toneva

Email: [stoneva@citub.net](mailto:stoneva@citub.net)

<http://www.wetco.knsb-bg.org>



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



## Table of contents

Introduction .....	4
1. OERs description and its coherence with the considered module unit .....	5
2. Health Care Sector .....	8
Description of the tests and mains results .....	8
General assessment of the health care OERs based on Jung, Sasaki, Latchem grid outputs.....	12
Purpose of the OERs .....	13
Ease of Use.....	14
Content.....	15
Pedagogy .....	15
3. Logistics Sector .....	19
Description of the tests and mains results .....	19
General assessment of the Logistics OERs based on Jung, Sasaki, Latchem grid outputs.....	25
Purpose of the OERs .....	25
Ease of Use.....	27
Content.....	28
Pedagogy .....	29

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

## Introduction

During the fourth phase of the project (IO4), each of the partners worked with their “silent” partners<sup>1</sup> to test the relevance of the materials produced<sup>2</sup>. In order to assure a European (comparable) dimension, every partner reported on the tests carried out in their respective countries, according to a provided common template. This template was structured into two main parts: the first open part where partners were free to describe their tests, the way they collected feedback from stakeholders and the main results. The second part was more standardized and included a set of indicators inspired by the work of Jung, Sasaki, Latchem<sup>3</sup>; indicators will be dealt with in short open texts by partners.

The partners have conducted different tests and collected feedback on OER in a variety of contexts. Whereas some partners had the possibility to involve students in classes, others focused on specialists and experts involved in training process: teachers, professionals, training centres managers, qualification standards developers. Using different approaches, each partner has collected feedback in the way that best fitted their local context and the nature of relations with VET providers.


4

However, the purpose of this report is to conduct a comparative analysis of the tests carried out in the different countries, identifying points of convergence and divergence among the contexts. The final objective is to provide an overall picture of what it has been possible to test, and in which way, with the purpose of developing a common framework for the project. OERs represents the main outputs of the project and they are intended to be gathered in an open web library, free to be disseminated and re-elaborated far beyond the project life and implemented in different learning environments.

<sup>1</sup> Silent partners are local national stakeholders dealing with the development of qualification standards in the two sectors considered: health care and logistics. These subjects were not directly involved in GreenSkills4VET partnerships, nevertheless they agreed to cooperate in order to test the proposed materials and eventually implement them in their training activities. Depending on the national context and on the institutional nature of the project’s partners, different typologies of stakeholders have been involved: teachers or deans of training institutes, experts in qualifications and standards at State level or professional branches level, entrepreneur’s organizations, trade unions.

<sup>2</sup> In this IO4 project phase all partners had to develop an appropriate Open Educational Resource (OER) making reference to the learning units’ improvements based on Sustainable development principles (see IO1 and IO2 report). All OERs had to be duly complemented by a didactic scenario in which the OER support deploys its learning potential.

<sup>3</sup> Jung, Sasaki, Latchem (2016), A framework for assessing fitness for purpose in open educational resources. *International Journal of Technology in Higher Education*. Springer.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

## 1. OER description and its coherence with the considered module unit

From the outset the GreenSkills4VET project has focused on two sectors: health care, and transport and logistics. Every partner has identified and developed a learning module/unit (see IO1 and IO2 reports) related to knowledge transfer of sustainable development principles. The purpose of these modules, which are to be embedded in existing formal learning standards, is that of “greening” these adopted standards and making trainees and trainers aware about this important issue. The table below shows the list of the chosen learning units for every project partner. In the IO4 phase of the project, partners had to develop pedagogical support targeted at learning outcome objectives. For each of them, the partners had the task to develop appropriate OERs with a twofold objective of firstly favouring a wide dissemination, and secondly raising awareness among trainers and students even beyond the national context where the specific OERs were developed.

**List of units/modules developed by the GreenSkills4VET partners**

Partner	Sector	Unit/module
Stiftung Fachhochschule Osnabrueck	Health Care	Requirements concerning nurses' work conditions and coping, especially interaction work
ASPETE	Health Care	Medication Administration
WETCO	Health Care	Structure and Organization of Health Care activities
Universität Kassel	Logistics	Developing a new Strategy Logistics in 2050 – Delivering Tomorrow GLOBALSUPPLYCHAIN GmbH & Co.KG
Céreq	Logistics	Feasibility of Transport Operation and Logistical Services
BFI OÖ	Logistics	Sustainable Logistics
Hellenic German Chamber of Commerce (DGIHK)	Logistics	Corporate Social Responsibility (CSR) with a focus on Sustainable Development

**The objective of this report is to carry out a comparative analysis of the OER tests carried out in the different countries. We want to draw a general set of conclusions**

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	


**from the tests without underestimating local specificities and the diversity of topics.**

On the one hand, we will keep separated the results of the two main sectors analysed (health care and logistics), thus, we will actually present two separate comparative analyses. On the other hand, we will base the analysis on the information provided by partners in the form of a common test feedback template in which the results of the activities carried out at local level with silent partners are described.

As reported in the table above, three project partners tested OERs in the health care sector while four other partners focused on transport and logistics. Here we provide some comparative aggregated results for the two sectors.

**List of units/modules and silent partners**

Partner	Silent Partners
Stiftung Fachhochschule Osnabrueck	<ul style="list-style-type: none"> <li>- Niels-Stensen-Kliniken, Bildungszentrum St. Hildegard, Osnabrueck, Aus-, Fort- und Weiterbildung für Gesundheitsberufe</li> <li>- Die Akademie des Klinikums Osnabrueck, Osnabrueck</li> <li>- Bremer Krankenpflegeschule der freigem. Krankenhäuser e.V., Bremen</li> <li>- Hochschule Osnabrueck, Studiengang Pflegewissenschaft dual</li> <li>- Wirtschafts- und Sozialakademie der Arbeitnehmerkammer Bremen (Wisoak)</li> <li>- Universität Bremen, Institut für Public Health und Pflegeforschung (IPP), Abt. 4, Qualifikations- und Curriculumforschung</li> </ul>
ASPETE	Institute of Vocational Training of Messolonghi, Region of Western Greece.
WETCO	<ul style="list-style-type: none"> <li>- Federation of Trade Unions in Health Care/KNSB –social partner, Trade Union</li> <li>- VET center of KNSB, implementing lots of VET courses in Health Care</li> <li>- Expert Committee on Health care sector - National Agency for VET - NAVET,</li> </ul>
Universität Kassel	<ul style="list-style-type: none"> <li>- 2 VET-teachers</li> <li>- 1 QHSE (Quality, Health, Safety &amp; Environment Specialist)</li> </ul>
Céreq	- Ministry of National Education: General Inspectors members of the Parity Consultative - Committee (CPC) in Transport and Logistics

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



	<ul style="list-style-type: none"> <li>- AFT: Association for the development of Vocational Education in the Transport and Logistics sector.</li> <li>- 1 teacher of a VET institute in Transports and logistics</li> </ul>
BFI OÖ	<ul style="list-style-type: none"> <li>- A trainer in logistics "Betriebslogistiker</li> <li>- MOLTOBENE GesmbH – freight forwarding agent</li> <li>- TLM Consulting Transport &amp; Logistic Management – Consulting transport and Logistics</li> </ul>
Hellenic German Chamber of Commerce (DGIHK)	<ul style="list-style-type: none"> <li>- Technological Educational Institute of Central Macedonia/ Logistics Department/ <a href="http://logistics.teicm.gr">http://logistics.teicm.gr</a> (this was advised by CEDEFOP)</li> <li>- City College <a href="http://citycollege.sheffield.eu">http://citycollege.sheffield.eu</a></li> <li>- Working group of Logistics of German Hellenic Chamber (Members are biggest Logistics and Transport Cos in Greece) <a href="http://griechenland.ahk.de/mitglieder/sektorspezifische-arbeitsgruppen/arbeitsgruppe-logistics/">http://griechenland.ahk.de/mitglieder/sektorspezifische-arbeitsgruppen/arbeitsgruppe-logistics/</a></li> </ul>

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

## 2. Health Care Sector

### Description of the tests and main results

In the healthcare sector the notion of sustainable development (SD) has been introduced in classical training units. Two of them (“**Medication Administration**” and “**Structure and Organization of Health Care activities**”) are generally taught at vocational training institutes and are integrated here with additional SD notions. The third unit (“Requirements concerning nurses’ work conditions and coping, especially interaction work”) mostly refers to the social dimension of sustainable development in terms of giving young professionals information about staying healthy while performing stressful work tasks.


The three OERs developed are:

- Requirements concerning nurses’ work conditions and coping, especially interaction work (Partner: Fachhochschule Osnabrueck)
- Medication Administration open WebQuest (Partner: ASPETE)
- Health care activities for sustainable development (Partner: WETCO)

What partners did here was not only to develop the OERs (to support the transfer of ideas) but to integrate them into a proper **didactic scenario** in which they have to be used. All partners had the possibility to test their unit in classes with trainees and, in addition, to gather the opinions of trainers.

**Fachhochschule Osnabrueck’s** scenario consists of 3 parts, each of 90 minutes in duration. The first part is a lecture called “Challenges and Coping in Interaction Work”, which is provided as Powerpoint presentation containing 22 slides. In addition, trainees have to complete a number of handouts in order to raise points of discussion. In the second part the learners work on their “WebQuests” in small groups of 3 to 5 persons. In the third part all students are back again together as a class. The groups share their findings during 10-minute presentations.

**ASPETE’s** scenario also focuses on WebQuest and web-explorations which are to be performed. Web explorations are structured into learning activities oriented to problem solving through the use of web sources. They are a type of project activity aimed at activating all students so that they cooperate to negotiate a subject, problem or team task assigned by the teacher. The purpose is to enable students to create topic-related posters after searching for information on the recycling of medicaments and their management by the 'social pharmacy'. Different tools and media are mobilized: WebQuest platform, videos, conceptual map, internet.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	




**WETCO** also developed a 3-step scenario: 1) presentation of documents and supporting material followed by work in small groups; 2) practical work on organization and structure of the hospital; 3) evaluation of work by the trainer with additional interaction with the students. A range of tools is utilised: explanation and short description of the unit, how and why to use it (with reference to the “GreenSkills4VET” project); slides with basic texts on the unit content; short videos and movies from YouTube; other sources - integrated in the slides; pictures and drawings (dos & don’ts); comics to illustrate the key messages of the OER.

As we have seen two out of three scenarios are based on the use of WebQuest (Osnabruck and WETCO), supported by the platform zunal.com. In ASPETE’s case, a local platform owned by a Greek vocational institute is used as an OER support platform. Zunal is an open accessible platform but the **intellectual property** framework of the published material lacks proper description.<sup>4</sup> We didn’t found clear mention of any sort of license type. The author(s) name(s) can be quoted on any WebQuest developed. In the website’s forum is mentioned that authors keep the intellectual property of the developed WebQuest and only them have the right to share and modify contents by logging in the platform. This lead to assume the existence of a CC BY license type with restricted possibilities of sharing and modification of materials by third parties. In the meantime, the registration of ASPETE’s OER on a local platform implies more clarity on property rights: Licence 4.0 International applies (CC BY NC SA 4.0).

The **rationale** of the three considered didactic scenarios are more or less the same. They support student activation and learner-centered learning; they focus on the use and application of information to solve problems; they support critical thinking, analysis, synthesis, transformation, organization and evaluation of information, application of knowledge, drawing conclusions, etc. In sum: they aim to develop students’ creativity. Indirectly, these methods also have the advantage of developing or strengthening students (and trainers) digital skills. Finally, they rethink didactic approaches to the subjects, alleviating the burden of the teacher, who is free to focus on the coordination of the learning session rather than having the responsibility to catch the attention of students as is the case in classical learning formats.

Of course, the modules are rooted in their didactic purposes. The module developed by **Fachhochschule Osnabrueck** deals with personnel and environmental-related resources, which can be activated to cope with emotional stressful situations in the professional Health

<sup>4</sup> Nevertheless Osnabrueck authors point out that they were allowed to add the following statement on the published materials: "We all benefit by being generous with our work. Permission is granted for others to use and modify this WebQuest for educational, non-commercial purposes as long as the original authorship is credited. The modified WebQuest may be shared only under the same conditions. See here CC-BY-SA the Creative Commons Attribution-Share-Alike license for details."

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

Care work routine. It refers to the social dimension of Sustainable Development in terms of giving young professionals information about staying healthy themselves. The unit is targeted at students who have already had their first substantial practical phase at their workplace.

The other two units (**ASPETE** and **WETCO**) aim to embed the concept of sustainable development in classical health care competences. In the first case, the unit “Medication Administration” which deals with the development of knowledge regarding drugs and their correct administration and storage, is complemented with concepts concerning the rational use of these resources, the avoidance of non-environmentally friendly practices like incorrect storage, groundwater contamination, and lack of medicament recycling. Additionally, the unit addresses the economic and social dimensions of the practice of the so-called “social pharmacy”, which was developed in Greece during the economic crisis (aiming at making residual stocks of drugs available to the most vulnerable sections of the Greek population


In the second case (WETCO), the unit focus on the training of health care assistants and especially on the organization of their activities. The training developed aims to deliver knowledge on the rights and obligations of health care assistants in labour processes, knowledge on structure and organisation of health care work and sustainable development aspects of the job performance; to gain deep knowledge on hospital functioning as well as how to perform health care assistant duties while respecting sustainability issues.

As explained above, in order to test the OERs and the connected learning scenarios, project partners worked with their own “**silent partners**”.

**Fachhochschule Osnabrueck** tested its materials with 3 different vocational training institutes, two in Osnabrueck and one in Bremen). Students in classes were involved in each case. They received the lecture in part 1 and were supervised during the WebQuest in part 2. After the third part, expert-interviews were conducted with teachers and group-interviews with learners. Additionally, the material was discussed with education experts in health care, among them those who were working on a new education and examination regulation for nurses in Germany<sup>5</sup>.

**ASPETE** tested the proposed materials at one vocational training institute. The partner particular emphasised to the teacher the need for the OER to be used correctly in terms of technological knowledge but also pedagogical and content knowledge (following the so-called TPACK approach). In addition, content knowledge cannot be taken for granted for a subject such as SD. The teacher may be competent regarding the vocational aspects of the

<sup>5</sup> « Verordnung des Bundesministeriums für Familie, Senioren, Frauen und Jugend und des Bundesministeriums für Gesundheit: Ausbildungs- und Prüfungsverordnung für die Pflegeberufe“, passing the cabinet of the FRG at 13-6-2018.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	




subject but not regarding education for sustainable development. For these reasons the information and the content proposed in the OER are informative for the teacher as well. The evaluation included questionnaires for the trainees as well as an interview with the trainer who implemented the OER.

**The WETCO** unit is conceived as an introductory part of a training module named “Structure and Organization of Health Care activities” in the Vocational Training of Health Care specialists. The tool developed has been tested with 3 different silent partners: a social partner (Federation of Trade Unions in Health Care/KNSB); a training institute which provides several courses for health care assistants, social assistants and paramedics (VET centre of Trade Union Confederation). The third partner was the “Health care” Expert Committee of the National Agency for VET - NAVET, responsible for development and approval of qualification standards in health care area. Thus, WETCO received feedback from trainees, trainers and experts.

**Feedback** was collected throughout by means of questionnaires targeting students, and interviews targeting teachers. Fachhochschule Osnabrueck and WETCO followed guidelines derived from the Jung, Sasaki, Latchem framework (2016) (see next section). Face-to-face interviews were carried out with teachers and group interviews with learners (feedback forms, transcriptions recordings). ASPETE submitted a self-made questionnaire to trainees as well as an interview with the trainer who implemented the OER. WETCO also conducted tests with experts in a slightly different way: they presented the unit to them, asking them to assess its usability in VET courses, its quality and to provide comments for improvements.

As **main outputs of the tests** we can say that the results can be analyzed from two different perspectives: firstly, from the point of view of the innovations introduced in pedagogy by the implementation of didactic scenarios and OERs; secondly, from the point of view of the improved use of IT support in classes:

- Looking at pedagogy aspects, evidence shows that the implementation of the OER can stimulate interest and encourage trainees to work creatively. Students are more accustomed to expecting definite answers from the teachers than working out their own perspective. WebQuests are therefore particularly helpful for deepening contents according to one’s own interests and bridging individual gaps of knowledge. The tasks provided seemed interesting and quite easy to complete. The use of WebQuest combined with “theoretical training” is still new (at least in VET) for students and experts; it is seen as a good option for “breaking the ice” in a classroom environment and captivating students’ attention. Nonetheless, the tools tested revealed some limitations. In the design of OER it is crucial to pay attention to the complexity of topics, especially when solutions and approaches are subjective and multiple. A student said: “We are used to looking at

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



what we are being presented with by the teachers, where there is one solution only; with WebQuest we have to think out-of-the-box and we get soon over-challenged”, underlining that the type of learning has to be learned in the first place too.

Thus, there is a need for less complexity. Students first have to get used to the infrastructure of such a WebQuest. Once they get used to it they can focus on the contents again which cannot be too much; the sequence of website must be optimized. Starting with a very simple, very clear introduction of what a WebQuest is can be a practical and easy solution. The concept of sustainable development needs to be introduced as well. Using videos is very attractive for students and for trainers; unfortunately most of them are in English and should be translated. Finally, simpler terminology has to be used in the evaluation questions.

- One important issue raised by the introduction of OERs is the VET trainers' familiarity with IT tools. It accentuates the gaps in digital literacy existing in the classes. In some cases students showed little experience with computers. Secondly, the OERs implementation requires specific prerequisites in terms of infrastructures like classroom size (big enough to permit groups work) and IT equipment. In some cases the available computers were insufficient and students used their own smartphone in order connect to WebQuest, highlighting the fact that the use of smartphones (with which the great majority of people is familiar) is a way to overcome both IT alphabetization barriers and lack of equipment problems.

## General assessment of the health care OERs based on Jung, Sasaki, Latchem grid outputs

All partners used the Jung, Sasaki, Latchem framework (2016) provided by the GreenSkills4VET project to analyze and sum up the tests results for further work. This grid found in recent literature on OERs pedagogy has been chosen to enable a standardized evaluation of the tests piloted in the different partner countries. It is a so-called fitness-for-purpose evaluation grid which makes it possible to evaluate 24 different items organised in four dimensions:

- Purposes<sup>6</sup>: Determine which, or which combination, of the possible purposes matched user needs. (partners were asked to tick one or more options)
- Ease of use by teachers and students. (partners were asked to add short comments on teacher and students usability).

<sup>6</sup> With respect to the original Jung, Sasaki, Latchem paper one item has been deleted because it is not relevant in the context of the greenskills4VET project.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



- Content (partners were asked to comment on the correctness, significance and relevance of contents).
- Pedagogy (partners were asked to evaluate teaching/learning effectiveness)

Regarding the first block ‘Purposes’, partners were asked to choose among 6 different criteria which are the closest to the purposes of the OER developed by ticking one or more different options. The table below show the results for health care.

### Purpose of the OERs

	Fachhochschule Osnabrueck	ASPETE	WETCO
Providing open, accessible and quality content for a wider community of teachers and learners.	X	X	X
Sharing best practice and helping to avoid re-inventing the wheel.	X		
Offering flexible non-formal and informal knowledge and skills accumulation pathways to formal study	X	X	X
Providing for geographically, socially or economically excluded students, non-traditional students, work-based learners, etc.		X	
Improving the quality of conventional and online education by achieving greater awareness of open and inclusive educational practices and varied perspectives on fields of study.	X	X	X
Enabling collaboration between institutions, sectors, disciplines and countries.	X		X

13

All three partners agreed on the three main purposes of the OERs. Firstly, the units developed contribute to open up and make accessible contents for a wider community of teachers and learners. Secondly, they offer more flexibility to formal learning by introducing

	GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).
This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.	

alternative practices. Thirdly, they contribute to spreading awareness among the community of open and inclusive educational practices.

## Ease of Use<sup>7</sup>

We asked partners to provide some short comments on usability items proposed by the grid. In order to provide a comparative evaluation of the partner's open answers, feedback has been classified according to a three-level scale. The lowest level (X) means that the item has been implemented but still presents some difficulties or lacks information; at the intermediate level (XX) we have classified responses indicating successful implementation even if some further developments would be required; at the highest level (XXX) we have classified answers indicating that the item has been fully developed and positively tested<sup>8</sup>.

Regarding OER usability, some problems have been encountered on OER open content licenses that in two cases out of three (Osnabrueck and WETCO) were not properly referenced, due to a lack of clear information of the Zunal platform.<sup>9</sup>

In all cases the developed OERs are eligible to be reused, revised and remixed with other resources or shared with students and other teachers. Nevertheless, WETCO stresses that the material can only be revised and improved by the author (Svetla Toneva) on the zunal web site; thus limiting further use and manipulation.


The screen design and navigation systems are clear and consistent for all partners. Design and navigation systems respect major standards. The design is responsive and usable across a variety of different screen sizes and devices. Only Osnabrueck experienced some difficulties in filtering searches among the vast amount of different WebQuests to find the suitable one. Every WebQuest has its own navigation, which can be individually adjusted by the author. An adjustment was necessary because the default navigation of the WebQuest was cluttered with unneeded menu items. This led to confusion among the students of the first practice test.

The presentation methods fully accord with the learners' knowledge and abilities in the case of ASPETE. Fachhochschule Osnabrueck put forward some issues of students who had only little or basic experience with navigating the internet for educational purposes. They needed additional help and instruction besides that given in the OER. WETCO point out that prior learner knowledge assessment (through a short questionnaire) could be good before starting the unit. This is particularly necessary in this very case where the unit was an introductory one and teacher has not yet provided enough background information to their students.

<sup>7</sup> See items list in the table below.

<sup>8</sup> The same kind of analysis applies also to the following sections: content and pedagogy.

<sup>9</sup> See footnote 4.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

## Content

The grid's content list is composed of 5 different items. In the first place the tests show that proper understanding of goals and contents was not so easy. In the German case some students had difficulties following the instructions given in the tasks. Most of them mentioned that there was not enough time to work on all tasks. The detailed descriptions of the tasks compounded this issue and, in retrospect, should have been shorter. Students from the first practice test were also confused as to what the goals were due to partially duplicated content on two different subpages of the WebQuest. Most groups therefore skipped most subtasks and focused on what they thought was necessary to create their flipchart-presentation (which was the final phase of the learning scenario considered). WETCO also put forward some students' difficulties in understanding some materials. According to these students, the language should be easier and the tasks should be explained and supported by the teacher/trainer. In ASPETEs' case, things went better; the trainees' evaluation (crossword puzzle) shows that the content has been understood to a large extent.

In all cases contents were judged accurate and up to date by teachers and experts, and they also expressed a positive evaluation of the contents covering educationally relevant concepts, enabling deep understanding.


The organization of contents from simple to complex has been respected in all cases. Partners' silent partners also stressed that the organisation of contents and the different phase of the overarching didactic scenario were coherently assembled.

The didactic contents deemed to be appropriate to the students' knowledge experience, also respecting language and ethnic diversity. In one case (ASPETE), the trainer described a negative reaction of a foreign student which was quickly neutralised thanks to the help of the group and the trainer.

## Pedagogy

OERs received the highest evaluations in the area of pedagogy particularly in the case of Osnabrueck and WETCO. To some extent, ASPETE stressed the need for further investigation especially to ensure that the OER provides opportunities for task analysis and solving hands-on real-world problems. Judgment about the transfer of the new knowledge and skills to different tasks, problems or contexts would require more evidence. In addition, the Greek partner also mentioned some possible improvements regarding instructional design. While it restricts opportunities for distractions, some students would have preferred a more attractive layout with more images, for instance.

Along with the above remarks, the tested OERs have proven to be valuable tools for developing pedagogy strategies in VET classes, and proven to be effective and pertinent for all the remaining items listed in the grid.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

**Table 1. Grid items list and OER evaluation by partner, health care sector.**

**EASE of USE**

	Fachhochschule Osnabrueck	ASPETE	WETCO
The OER accords with open content licenses (e.g. Creative Commons) that have been properly referenced and applied to the resources.	X	XXX	X
The OER can be reused, revised and remixed with other resources or shared with students or other teachers.	XXX	XXX	XX
The screen design and navigation systems are clear and consistent	XX	XXX	XXX
The presentation methods accord with the learner's knowledge and abilities.	XX	XXX	XX

16

**CONTENT**

The goals and content are easily understood	X	XXX	XX
The content is accurate and up to date.	XXX	XXX	XXX
The content covers educationally significant concepts and enables deep understanding	XXX	XXX	XXX



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



The content progresses from simple to complex. <i>(the question could also be understood as if the contents has been explained in a more coherent manner)</i>	XXX	XXX	XX
The content is appropriate to the students' knowledge, experience, language, ethnicity, race, culture, religion age, gender or other circumstances.	XXX	XX	XXX

## PEDAGOGY

The OER gains and maintains students' attention and interest.	XXX	XXX	XXX
The OER helps the students recall, relate or apply prior knowledge, skills, experience, etc.	XXX	XXX	XXX
The OER provides a sound structure for knowledge and skills development.	XXX	XXX	XXX
The OER provides opportunities for task analysis and solving hands-on, real-world problems.	XXX	X	XXX
The OER's text, images, audio and video elements and hyperlinks provide diversity in learning	XXX	XXX	XXX
The instructional design focuses on the key aspects of the learning and lacks distracting features.	XXX	XX	XXX
The OER contains in-built feedback, support and assessment.	XXX	XXX	XXX
The OER enables the transfer of the new knowledge and skills to different tasks, problems or contexts.	XXX	XX	XXX
The OER enables the students to consolidate their learning or construct personal meaning through reflection, discussion, demonstration of new knowledge or skills, etc.	XXX	XXX	XXX

17



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

**Legend:** X the item is implemented but still incomplete, there are still some issues or a lack of information; XX The item is implemented, it works well, even if some further developments could be useful; XXX the item is fully developed and positively tested.



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

### 3. Logistics Sector

#### Description of the tests and main results

In the logistics sector, the concept of sustainable development (SD) involves the identification of specific units capable of providing a stronger green dimension to traditional qualifications standards. The most common curriculum in which these SD units could be embedded is for **freight forwarding and logistics services clerk courses** (EQF level 4 or 5 depending on the country), but the use could be extended to other close logistics training contexts even at different qualification levels.


The three developed OERs are:

- Sustainability and sustainable logistics (Partner: BFI OÖ Linz)
- Corporate Social Responsibility (Partner: DGIHK Thessaloniki)
- Developing a new Strategy Logistics in 2050 – Delivering Tomorrow (Partner: University Kassel)
- Feasibility of the implementation of a sustainable Reverse Logistics (author partner: Céreq, Marseille)

Three of these new units are based on SD development for logistics operations. **BFI OÖ's** OER builds upon a significant number of web sources identified in the Austrian context and puts forward pedagogical solutions for adapting the use of these sources to different settings: face-to-face training or E-learning. **University Kassel's** OER develops a role play scenario in which the learner participates and it is mostly conceived as a class activity. **Céreq's** OER is conceived in 4 separated parts (didactic scenario, training support, WebQuest, evaluation support) and aims to provide teachers with all the necessary elements to easily implement the new resources in the teaching programme. **DGIHK's** covers the wider topic of Corporate Social Responsibility with a specific focus on logistics companies. As stated in UNESCO, 2005, International Implementation Scheme<sup>10</sup>, environmental, economic and social dimensions are supplementary for developing a full sustainable process. The Greek partners decided to focus on CSR as the social leg of SD, which is less covered by the other partners and was coherent with overall mission of the Chamber to support entrepreneurship in Greece on a topic that still is largely neglected.

Some partners had the opportunity to **test their tool** in classes with trainees and, in addition, to collect the opinions of trainers. Other partners, due to the lack of access to classes in the

<sup>10</sup> UNESCO, United Nations Decade of Education for Sustainable Development (2005-2014). October 2005.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

testing period, have only solicited the opinions of qualified experts. This is particularly the case of French and Greek tests. Looking at the French case, the stakeholders involved are full members of the Ministry of Education’s committee, having the responsibility to design and update VET qualification standards in transport and logistics<sup>11</sup>, these experts have a deep knowledge of the national education background and labour market reality in the sector. In the case of Greece, DGIHK, as a chamber of commerce, quite naturally favoured contact with companies in the first place, and then involved them in a panel during the tests.


Of course, what partners did here was not only to gather pedagogical resources but also to integrate them into a proper **didactic scenario** in which these supporting materials have to be used in a coherent way.

The tool implemented by the **University Kassel** has the benefit of offering a well detailed class simulation:

*“You have been an employee at GLOBALSUPPLYCHAIN GmbH & CO. KG – GSC for some years. Current environmental studies make it clear, that among other things, on account of the very high CO2 emissions a dramatic change in climate is likely to occur. Therefore, the company increases its awareness of sustainability and is willing to take greater consideration of the environmental impact of its activities (...). The new strategy should help GSC to maintain its market position. (...) The employees are involved at a very early stage in teams. The management has asked you and other colleagues for support to adopt more environmentally friendly policies and improve the sustainability of the company. The new business concept should consider principles of ecological, economic, ethical and social aspects of sustainability to adapt the company also to the social and specific challenges of the logistic market. The results of your work should also provide the basis for an environmental audit of the company and a sustainability report. The workers' council of GSC are participating in the teams.”*

This content description is provided to students in class and is the background to the work in groups on the topic. This learning unit is conceived for six hours of training. Depending on the group of learners, the lesson can last more than six hours (up to two days). Students can also work on the unit in time-split lessons, so that some of the research can be done in-between the lessons. The module is organized into three different phases: in the first phase the class is broken down into groups of five that represent several workers’ councils of the GSC company. They have to work around the strengths and weakness of this company on the basis of corporate data provided. The second phase is more knowledge-transfer based. The students have to read a text about climate change and environmental impact, to summarize the main statements and to conduct additional web searches on the topic. The

<sup>11</sup> Comité Paritaire Consultatif (CPC) in transport and logistics.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

third part is group work in which students establish a business concept for sustainability of the company. The material is rounded off with useful web addresses and an evaluation grid for the students to complete.


In the development of its OER, **BFI OÖ** paid special attention to the possibility of using the material in different contexts and learning environments, and creating printable and digital versions. It provides a large selection of content:

- Brief description of the product and the context of the Green Skills for VET product as well as some knowledge and didactic guidelines for teachers/trainers
- Lectures on the definition of sustainable development and sustainable logistics accompanied by a PDF text document or PowerPoint presentation
- Short videos on sustainable development and sustainable logistics (YouTube)
- PDF / Worksheets with questions & methods for working with the contents, including didactic instructions for trainers/teachers
- Questionnaire for self-assessment (individual and/or group) and/or feedback

The BFI-OÖ OER actually is a compilation of pre-existing materials on sustainability and sustainable logistics - such as texts, videos for trainers and learners and a link with a great amount of learning material - which were previously organised in an OER on sustainable logistics, available in Austria. The materials were presented to two trainers in the logistics sector who gave feedback in the form of an interview and written report. In addition, some trainers tested the OER with a group of students.

**Céreq**'s OER is specifically conceived to provide information on the overall operations for the organization of the reverse flow of products: back from the customer to the producer and it includes concepts related to the reuse of products and materials: recover, remarket, recycle, reuse. The scenario proposes a 5-hour lesson. It is composed of two printed documents, in pdf format, and a multiple-choice questionnaire for evaluation. The first document is a 17-page text describing the characteristics of reverse logistics and the important information needed to analyse transport demand. Some video links are provided at the end of the document. The second document is a WebQuest group workshop description, including a specific scenario in which students are invited to work in groups:

*“You are working for Goodies, a company which produces and distributes goods – which are mainly sold online (e-commerce) via the company’s website. This company wishes to rationalize its return flow process (after-sales services, repair, recycling...). You are in charge of this project and you have to present an analysis of the specific - regulatory, material, human, financial and environmental - constraints related to the Reverse Logistics*

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



*process during the next team meeting. More particularly, Goodies' management wishes to have your opinion on whether the company should outsource this job or not, depending on the identified constraints”.*

The proposed exercise aims at identifying on the web the legislative, human, organizational, financial and environmental constraints on the implementation of reverse logistics, and to give a 20 minutes presentation in class, including a PowerPoint presentation. The questionnaire aims at addressing students acquired knowledge on the subject.

**DGIHK's** main concern was to design a tool that, on one hand, could be easily integrated into existing curricula of freight forwarding clerk courses and, on the other hand, would be attractive enough to engage teachers and learners. The guiding rationale was therefore to keep things “short and simple”, which means a low number of training hours is required in order to cover the topic, and that the level of knowledge transfer was adapted to the EQF 4/5 training level. Consequently, the tool is composed of a short unit content profile, a Zunal webpage with the educational unit contents, and a discussion followed with further information where required.

Two out of four scenarios introduce WebQuest elements (Céreq and DGIHK). In the Greek case, it is supported by the platform zunal.com while Céreq made the choice to propose an initial list of suggested sources, giving students the freedom to select Internet sources. In both cases the student subgroups have to prepare an oral presentation on the results of their research. University Kassel's OER is based on a scenario simulation but without the integration of a WebQuest action. **BFI OÖ** focused more on the collection of different relevant materials made available for teachers for their own organization of the didactic activity.

With regard to **intellectual property**, like some other partners, **DGIHK**, (see health care previous section) decided to use the Zunal open access platform which lacks a proper description regarding the published material. The website doesn't specifically mention any sort of license, which makes it unclear who or what entities hold the intellectual rights to the content. A CC BY SA license should be released but it is not clear if it is possible to add a non-commercial attribution or if it is just a CC BY license.<sup>12</sup> In the case of **BFI OÖ**, the gathered OER tools and learning materials could, in some cases, provide references to property rights but any clear and overall reference is still not present to regulate the full package. **University Kassel** and **Céreq** made the choice to protect the produced contents with a Share-Alike attribution (CC-BY-SA), a license requiring any new products based on the original to be labelled with the same license (in addition to crediting the original author).

<sup>12</sup> See footnote 4.


	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

The **evaluation** of the OER took place more or less in the same way: in personal, structured interviews with the experts who were willing to check the developed tools and documents : logistic trainers in **BFI OÖ**'s case (some class tests were implemented for a part of the OER), senior experts from the sector council or Ministry of Education in case of **Céreq**, and entrepreneurs in case of **DGIHK. University Kassel** involved 2 VET-teachers and 1 QHSE (Quality, Health, Safety & Environment Specialist), in addition about twenty students evaluated the unit as well by means of the evaluation framework which is part of the OER unit.

All experts and trainers involved were familiarised with the entire OER through a personal presentation and were invited to give their comments, feedback and recommendations; in many cases the Jung, Sasaki, Latchem grid was used as support for collecting feedback.

We will now look at the **main results** on a case-by-case basis:

- **BFI OÖ.** All three trainers in the logistic sectors thought the developed material of the OER was good and valuable for use in a training situation for the logistic VET sector. The main concern was that in the current logistics curriculum there is a very tight timeframe to get through all the existing curriculum subjects, and that as sustainability and sustainable logistics are not currently part of the curriculum, there is not enough time to teach the subject “sustainability and sustainable logistics” on an ordinary logistics training course. One trainer said: “In my opinion it is generally difficult to associated sustainability with logistics. In Austria I find they do not go together so well. Usually sustainability here is about “repairing damage”, and less about “preventing the damage”. A second trainer said: “The learning material and videos are good. It is important for the implementation of the material to make the sequence strongly self-reflective in personal and professional areas. To bring everything they learn back to their own practice. I really like the PowerPoint on sustainable logistics. I did not know it existed. I will use it for my teaching in the future”. To sum up, the developed OER support seems relevant to trainers but its use is tightly linked to a larger rethinking of the VET curriculum, and leaving enough space to treat this new crucial issue.
- **DGIHK** results show a general acceptance of the OER, but nevertheless there is room for further improvement of contents and tools. The educational unit design was in its very early stages and further improvement was expected. The partners expressed their interest in the material produced. It became clear that it will be possible to introduce this new unit in the preparatory pedagogic work during the upcoming training year. Furthermore, the German Hellenic Chamber is working on a new internal project in order to create an institute for dual education in the country, based on the German dual education model, and is expressing its willingness to introduce a unit for Corporate Social Responsibility in training. In this sense DGIHK is committed to ensuring sustainability of the OER output beyond the European project life.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



- **University Kassel.** Overall, test outcomes are very positive. A VET teacher sent a global statement: “the unit is ambitious and is transferrable to various learning fields and different learning groups”. About twenty students evaluated the unit as well (an evaluation framework is part of the unit). The results of the student evaluation indicate that they were confronted with an unaccustomed learning method and content.
- **Céreq.** Tests carried out by Céreq team were specifically conceived to get feedback from pedagogy practitioners in order to complete and integrate the work carried out at content level. As expected, all experts agreed on the relevance of introducing reverse logistics notions in training and were quite satisfied with the organization of the contents. In this respect many suggestions were made concerning how to maximize the dissemination of the OER among teachers and professionals (AFT, the branch organization, is willing to distribute the information across its network of training schools, while the OER could eventually be available for open download on public education platforms). The testers gave many useful suggestions aimed at strengthening the pedagogical aspects of the OER in order to make the specific tasks to carry out as clear as possible to the students, and improve their pro-active understanding of concepts. In conclusion, it is worth underlining the disagreement among professionals about the use of English language supporting materials, some of whom expressed an interest in introducing, for instance, some schemes and videos in English (on the French version of the OER), forcing students to mobilize their own language competences. In contrast, some other experts preferred to focus on a good level of understanding of the module topics (reverse logistics) while avoiding language complications.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



## General assessment of the logistics OERs based on Jung, Sasaki, Latchem grid outputs

All partners used the Jung, Sasaki, Latchem framework (2016)<sup>13</sup> provided by the GreenSkills4VET project to analyze and sum up the tests results for further work. This grid found in recent literature on OER-pedagogy has been chosen to enable a standardized evaluation of the tests piloted in the different partner countries. It is a so-called fitness-for-purpose evaluation grid which allows for the evaluation of 24 different items organised in in four dimensions:

- Purposes<sup>14</sup>: Determine which, or which combination, of the possible purposes matched user needs. (partners were asked to tick one or more options)
- Ease of use for teachers and students. (partners were asked to add short comments on teacher and student usability).
- Content (partners were asked to comment on the correctness, significance and relevance of contents).
- Pedagogy (partners were asked to evaluate teaching/learning effectiveness)


Regarding the first block ‘Purposes’, partners were asked to choose among 6 different criteria which are the closest to the purposes of the OER developed by ticking one or more different options. The table below show the results for logistics.

### Purpose of the OERs

	BFI OÖ	DGIHK	University Kassel	Céreq
Providing open, accessible and quality content for a wider community of teachers and learners.	X	X	X	X
Sharing best practice and helping to avoid re-inventing the wheel.	X			X

<sup>13</sup> Jung, Sasaki, Latchem (2016), A framework for assessing fitness for purpose in open educational resources. International Journal of Technology in Higher Education. Springer.

<sup>14</sup> With respect to the original Jung, Sasaki, Latchem paper one item has been deleted because it is not relevant in the context of the greenskills4VET project.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



Offering flexible non-formal and informal knowledge and skills accumulation pathways to formal study	X		X	
Providing for geographically, socially or economically excluded students, non-traditional students, work-based learners, etc.		X		
Improving the quality of conventional and online education by achieving greater awareness of open and inclusive educational practices and varied perspectives on fields of study.		X	X	X
Enabling collaboration between institutions, sectors, disciplines and countries.	X			

In the first part of the grid partners were asked to use feedback from experts in order to indicate the main purpose of their own OER. Some of the partners (**BFI OÖ** and **University Kassel**) decided to put this question directly to the experts, who ticked their own preferred boxes. As a result we have a wide variety of distribution of preferences. In **BFI OÖ**'s case there is no consensus on the main purpose. All of them seem relevant for at least 2 (out of 3) experts. Nevertheless, 4 purposes were agreed upon by all of the interviewed experts (see table above). **University Kassel** also adopted an expert pooling method but in this case there is more consensus on 3 (out of 6) purposes. **DGIHK** also indicated 3 purposes which don't correspond to the other partner choices. **Céreq** also judged all of the indicated purposes of its OER as relevant, and was thus asked to rank the items. The table above reports the first 3 choices (out of 6).

What is interesting to conclude is that only one purpose (Providing open, accessible and quality content for a wider community of teachers and learners) secures the consensus among partners and among the developed OERs. There is, of course, diversity among the OERs with regard to format and contents, which helps to explain the different choices (even if all of them make reference the same sector of logistics and the same education level), but it is likely that different national backgrounds and conditions of implementation could also play a role.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	



## Ease of Use<sup>15</sup>

We asked partners to provide some short comments on usability items proposed by the grid. In order to provide a comparative evaluation of the partner's open answers, feedback has been classified according to a three-level scale. The lowest level (X) means that the item has been implemented but still presents some difficulties or lack of information; at the intermediate level (XX) we have classified responses indicating successful implementation even if some further developments would be required; at the highest level (XXX) we have classified answers indicating that the item has been fully developed and positively tested<sup>16</sup>.

Regarding usability purposes, the feedback shows that in 2 OERs the license information was not yet properly referenced: **BFI OÖ**'s CC license was still not completed; in a second circumstance (**DGIHK**), the silent partners involved were not familiar with the Creative Commons methodology and avoided making a judgement on this item. Nevertheless, the adoption of the Zunal platform WebQuest entails the limitation already explained above concerning a lack of proper description of the published material. In the other two cases (**University Kassel** and **Céreq**), intellectual property licenses were clearly indicated in all documents and supporting material.

In 3 cases the testers put forward some remarks on screen design and navigation through the contents. **BFI OÖ** reported the need for further development, in particular regarding navigation description and screen design; also in the **DGIHK** case, one silent partner expressed concerns about the navigation, especially when used by persons unfamiliar with OER educational tools. After discussion, specific improvements were made on the introduction page in order to clearly explain the process at an early stage. In the case of **Céreq**, the decision was made to present all contents in PDF format which appears clear and consistent to the testers. Nevertheless, there were discussions to find out if the listed external supporting material, such as videos, web links and schemes, should be in French or whether teachers and students would want to keep some of them in English language..

The reuse, revision, remix, and merging possibilities for contents seem to be practicable and straightforward for all the presented resources. Presentation methods accord with the learners' knowledge and abilities in almost all cases. **University Kassel** reported some differences among the interviewed experts on this point, ranging from "the selected methods use the learners' knowledge and help to further improve it" and "in some cases a lot of specialized knowledge is needed, which is taught only in later years of apprenticeship."

<sup>15</sup> See items list in table below.

<sup>16</sup> The same kind of analysis applies also to the following sections: content and pedagogy.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

## Content

Regarding content issues, goals and contents which are understandable for all the developed learning tools, in one case (**Céreq**) a number of experts requested an improvement in the description of the different phases of the learning scenario, detailing the available time for every phase, and mentioned the need to provide further details on some specific schemes. These improvement suggestions have been taken into account in the preparation of the final version of the OER.


A number of remarks were collected concerning content-related accuracy and updates: in **BFI OÖ** tests it is emphasised that the tool sufficiently conveys a convincing impression to the users on the necessity of sustainable actions on a broad basis in the logistic sector. An update has been made to one topic (Kyoto protocols in the PowerPoint for sustainable logistics). In the case of **DGIHK**, one evaluator proposed the integration of more European regulations and policies for CSR. For the **Céreq** OER, the content is judged to be pertinent and up to date. The experts found most of the important parts such as history, regulations and description of the different phases of the reverse logistics sufficiently clear and well described. Nonetheless, some parts such as images and schemes require additional information or more details. Furthermore, the lack of economic/financial background has also been pointed out. Actually this dimension was voluntarily omitted by the OER authors as the main purpose of the OER is to introduce the concept of reverse logistics, placing it in the general framework of traditional logistics and keeping it simple for broader dissemination. Nevertheless, the teachers could integrate a financial dimension into the proposed contents by means of supplementary exercises (i.e. by introducing financial figures in the case study).

28

The OER contents covers educationally-significant concepts and enables deep understanding in almost all cases. In the Greek test, the Technical University of Central Macedonia noted that it would be important to include a best practice case in order to provide examples of excellence. **DGIHK** argued that this unit refers to VET and thus aims at introducing the main definition and principles of CSR to students in order to make them realize how they can represent the corporate message of CSR through their position. For that reason, it was decided to retain the current form..

In all cases, the degree of complexity of the presented material is progressive. The content progresses from simple to complex. In the case of **University Kassel**, the last presented task is judged to be quite complicated, and one expert recommends it for advanced training levels.

In all cases, the content is appropriate to the students' knowledge, experience, language, ethnicity, race, culture, religion age, gender and other circumstances. All partners state that

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

their OERs have a good education level, that contents can be easily adjusted to country-specific characteristics, and that gender and diversity guidelines have been respected. **Céreq** made extra effort to attain an acceptable level of diversity in different elements (video and web) for integration in the OER. They strove to achieve as much diversity as possible (i.e. gender, ethnicity) but it was not often possible due to the limited availability of sources related to this male-dominated industry.


## Pedagogy

In general, the feedback was positive on the capacity of the developed units to maintain students' attention and interest. In **DGIHK**, evaluating partners provided some suggestions in order to improve the flow of information on the introductory page and throughout the different pages of WebQuest which should positively improve student attention. **University Kassel's** OER is judged to be suitable for gaining and maintaining the students' attention and interest because of its professional relevance and its open tasks. Current topics as well as work with online sources should ensure the students' interest. The responsibility of creating one's own sustainability concept will also be beneficial. Nevertheless, one silent partner noticed different degrees of motivation of the learners. For **Céreq**, some experts pointed out that in certain parts, it would be worth adding more guidance for trainers in order to rapidly connect the WebQuest or MCQ with concepts presented in the lesson documentation. This would improve the trainers' focus and prevent students getting distracted. In **BFI OÖ** tests, in classes this modern teaching method was very successful in activating learners' attention, and it is seen as a good basis for successful learning.

29

The OERs help students recall, relate or apply prior knowledge, skills, experience. Two main remarks were recorded in **DGIHK's** case: it was commented that CSR is a completely new topic in freight forwarding clerk VET training so it is not easy to make connections with prior knowledge. In the case of **University Kassel's** silent partners, there was complete agreement with the fact that the OER helps the students to recall prior knowledge by identifying and analysing problems, developing solutions and presenting the results. As sustainability is closely connected to the economic circumstances of a company, students can also apply their knowledge from previous courses. One expert states that perhaps some additional support and materials are needed because of the high level of the OER.

From the experts' perspective all OERs provide a sound structure for the development of knowledge and skills because the different tasks lead to different skills: searching for information, information analysis and interpretation, presentation of the results and defining possible solutions. In **University Kassel** tests, one silent partner mentioned that the time required for the teaching unit could be too short.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	




Feedback was also positive concerning the capacity of the OERs to provide opportunities for task analysis and solving hands-on, real-world problems. In one case (**DGIHK**), one of the evaluators was not convinced by the possibility of linking unit contents with problems or tasks which arise in the daily business of a freight forwarding clerk. This could be due to the nature of the subject (namely Corporate Social Responsibility).

In the case of the **DGIHK** OER, the OER's text, images, audio and video elements and hyperlinks were judged to be insufficiently developed (very basic level of the audio and visual resources). It was discussed among interviewees how to enrich these elements in order to arouse the interest of students. In the case of **University Kassel**, because of its format type (PDF), one expert recommends a greater involvement of audio-visual elements, for example for the introduction of the model enterprise. This is, for instance, what **Céreq** tried to do by introducing several links to video support in its PDF-format OER.

Incidentally, the introduction of a set of videos in the **Céreq** OER lead to a remark about the content-related consistency of these videos. They are used as complementary information and to sum up broad concepts in a short amount of time. To this extent, some videos were considered by some experts as too general or repetitive, even when very short in duration (4 minutes on average). The OER authors are convinced that using these videos during the WebQuest is an important point for maintaining learners' attention and that they do not take up too much time. For the **University Kassel**, according to the silent partners, the combination of the products developed (the presentation and the concept) could be too much, and the presentation would perhaps be sufficient in some course settings.

The final items of the grid found general approval from the experts, in all respects, of the in-built feedback and assessment tools contained in all OERs; and that the OERs also easily enable the transfer of the new knowledge and skills to different tasks, problems or contexts and enable the students to consolidate their learning.

In a number of cases the central role of the trainer, also in the presence of these new pedagogical methods, was clearly reaffirmed. A clear shift takes place from the classical teaching position, based on theory-based transfer of concepts (teacher-centered model), to a role of guidance and support for active learning in classes (learner-centered approach). The teacher will support learners over the course of the WebQuests, providing useful hints, clarifying ambiguous concepts, and helping to find solutions to dilemmas. The trainer role and responsibility involves thinking about how he/she will integrate the material into the class.

	<p>GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).</p>
<p>This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>	

**Table 2. Grid items list and OER evaluation by partners, logistics sector.**

**EASE of USE**

	BFI OÖ Linz	DGIHK	University Kassel	Céreq
The OER accords with open content licenses (e.g., Creative Commons) that have been properly referenced and applied to the resources.	X	X	XXX	XXX
The OER can be reused, revised and remixed with other resources or shared with students or other teachers.	XXX	XXX	XXX	XXX
The screen design and navigation systems are clear and consistent	XX	XX	XXX	XX
The presentation methods accord with the learner's knowledge and abilities.	XXX	XXX	XX	XXX

**CONTENT**

The goals and content are easily understood	XXX	XXX	XXX	XX
The content is accurate and up to date.	XX	XX	XXX	XX
The content covers educationally significant concepts and enables deep understanding	XXX	XX	XXX	XXX



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

The content progresses from simple to complex. <i>(the question could be also meant as if the contents have been explained in the more coherent manner)</i>	XXX	XXX	XX	XXX
The content is appropriate to the students' knowledge, experience, language, ethnicity, race, culture, religion age, gender or other circumstances.	XXX	XXX	XXX	XXX

### PEDAGOGY

The OER gains and maintains students' attention and interest.	XXX	XX	XX	XX
The OER helps the students recall, relate or apply prior knowledge, skills, experience, etc.	XXX	XX	XX	XXX
The OER provides a sound structure for knowledge and skills development.	XXX	XXX	XX	XXX
The OER provides opportunities for task analysis and solving hands-on, real-world problems.	XXX	XX	XXX	XXX
The OER's text, images, audio and video elements and hyperlinks provide diversity in learning	XXX	X	XX	XXX
The instructional design focuses on the key aspects of the learning and lacks distracting features.	XXX	XXX	XX	XX
The OER contains in-built feedback, support and assessment.	XXX	XXX	XXX	XXX
The OER enables the transfer of the new knowledge and skills to different tasks, problems or contexts.	XXX	XXX	XXX	XXX
The OER enables the students to consolidate their learning or construct personal meaning through reflection, discussion, demonstration of new knowledge or skills, etc.	XX	XXX	XXX	XXX

32



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



**Legend:** X the item is implemented but still incomplete, there are still some issues or a lack of information; XX The item is implemented, it works well, even if some further developments could be useful; XXX the item is fully developed and positively tested.



GreenSkills4VET - The Attribution-ShareAlike, or CC-BY-SA, license builds upon the CC-BY by requiring that the user licenses any new products based on the original under identical terms (in addition to crediting the original author).

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.